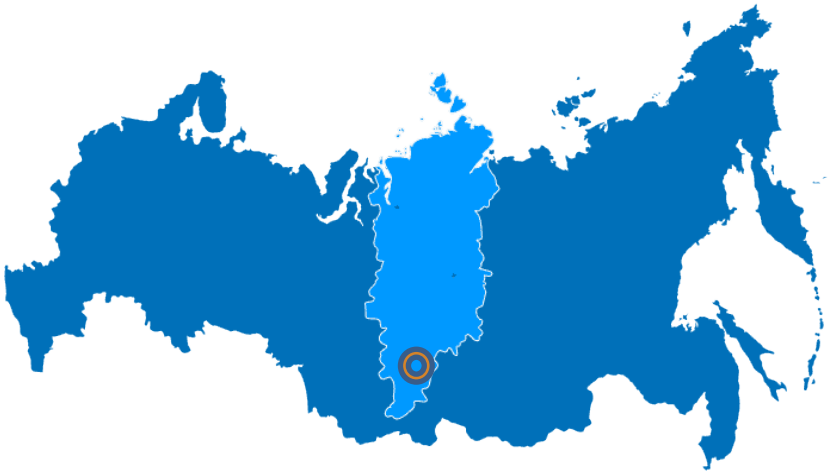
ROSCOSMOS

RESHETNEV
COMPANY

# ACADEMICIAN M.F. RESHETNEV INFORMATION SATELLITE SYSTEMS

# AT THE HEART OF RUSSIA



ISS-Reshetnev Company is located in Zheleznogorsk city of Krasnoyarsk region.

**Design bureau, all manufacturing and testing facilities are situated in Zheleznogorsk.**

The population of Zheleznogorsk is 100 000 people (9% of them are ISS-Reshetnev employees).

# 56 YEARS IN SPACE

**1200+** Satellites
and
**40+** types
of ISS Satellite Systems
manufactured and
successfully launched

## HERITAGE

**1959 – ISS-Reshetnev was established**

**Company is the leading manufacturer of satellite systems in Russia**

**Total number of over 1250 satellite were made and launched**

## ACTIVITIES

**Designing | Manufacturing | Integration | Testing**
**Prelaunch activities and launch | Operation and customer support**

## SATELLITE APPLICATIONS

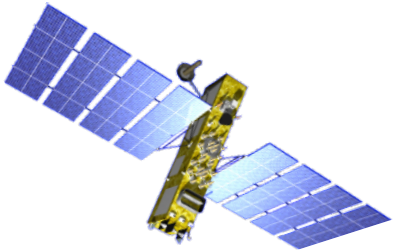
**Telecommunication | Navigation | Geodesy | Science exploration and experiments**

## ORBITS

**LEO | MEO | GSO | HEO**

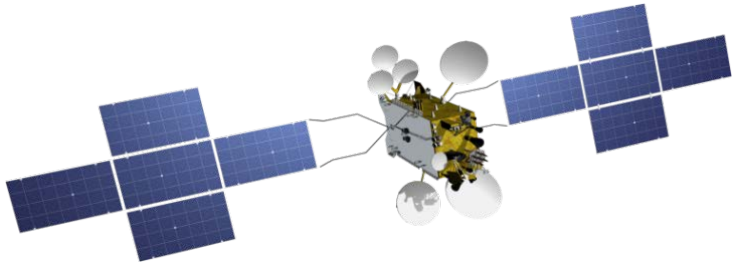
# DIFFERENT SATELLITE APPLICATIONS

## NAVIGATION



GLONASS-K

## TELECOMMUNICATION



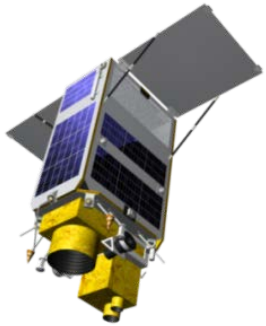
EXPRESS-AM5

## GEODESY

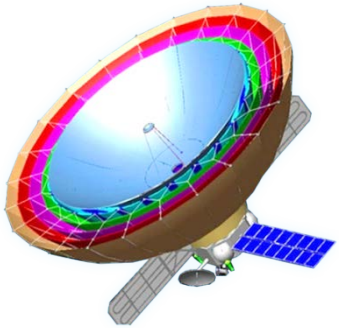
GEO-IK-2

## SCIENTIFIC EXPERIMENTS

MIR



ISS-55

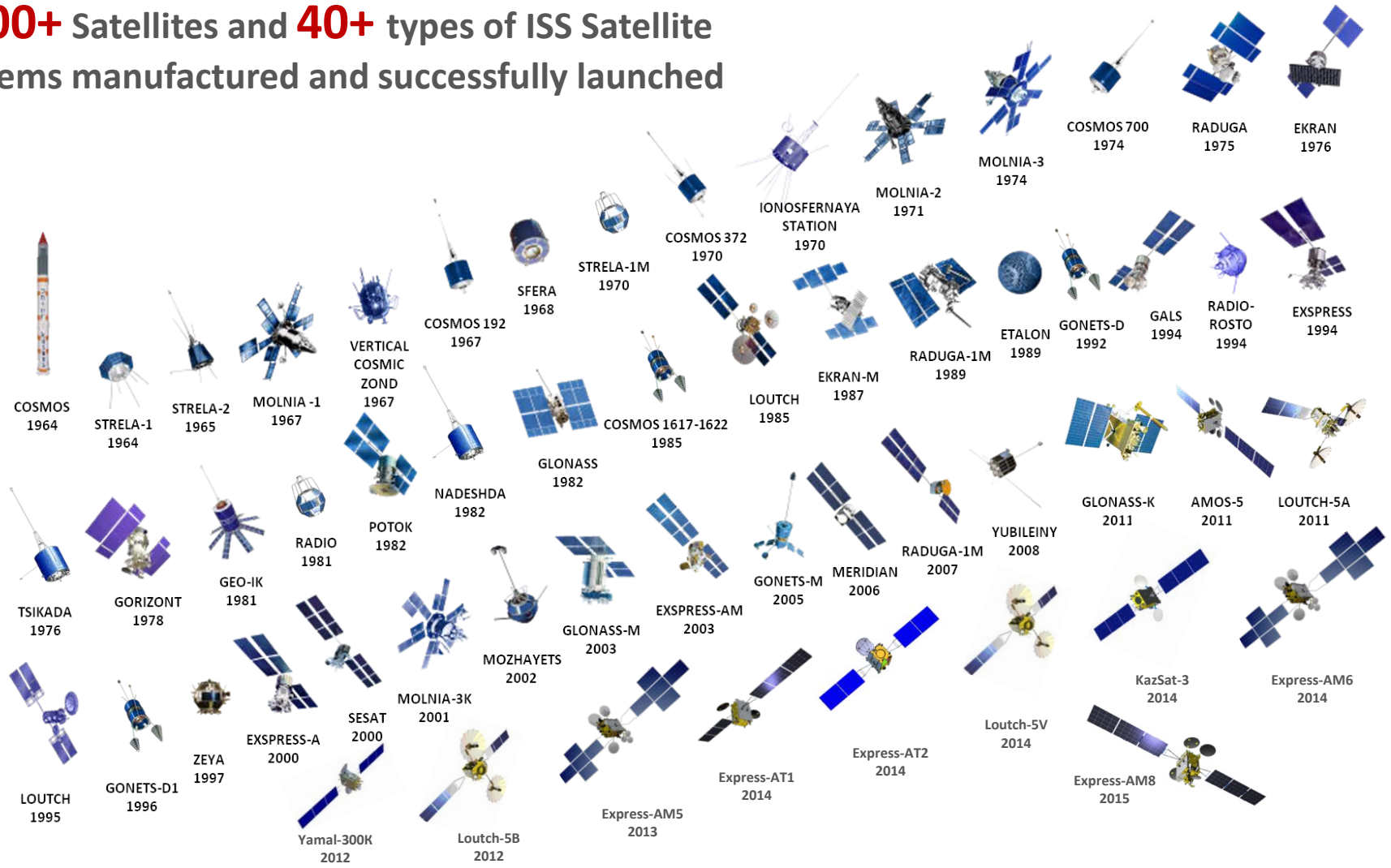


MILLIMETRON

# HERITAGE THROUGH YEARS

**1200+** Satellites and **40+** types of ISS Satellite

Systems manufactured and successfully launched



# LONG-TERM COOPERATION

## CUSTOMERS

eutelsat communications via satellite

GAZPROM SPACE SYSTEMS

RSCC

Telkom Indonesia

AMOS by Spacecom

AOneSat

## SUPPLIERS

ThalesAlenia Space

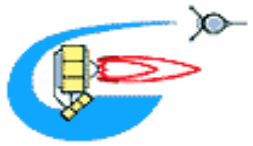
MDA

ROHDE&SCHWARZ

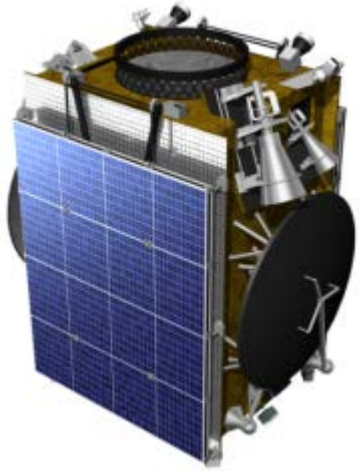
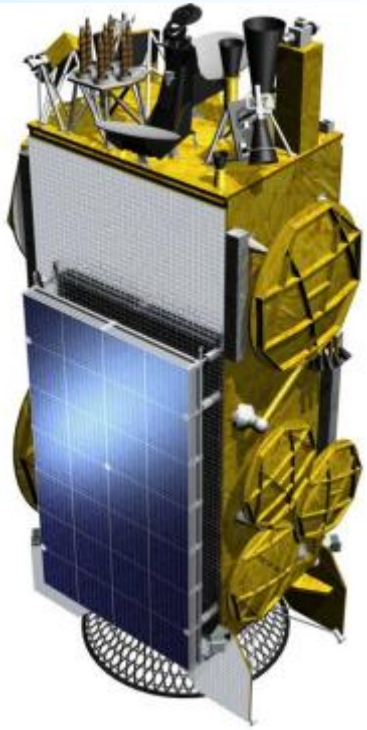
NEC

EADS SODERN

saft



# SATELLITE DESIGN VIEWS

| Express-1000K Platform | Express-1000H Platform | Express-2000 Platform |
|---|---|---|
|  |  |  |

**All platforms are flight proven**

## Projects

| Express-1000K Platform | Express-1000H Platform | Express-2000 Platform |
|---|---|---|
| Express-AT2 | Amos-5, Telkom-3, Yamal-300K, Lybid, Express-AT1, Express-AM8, KazSat-3 | Express-AM5, Express-AM6, Yamal-401 |

# KEY PERFORMANCES OF THE PLATFORMS

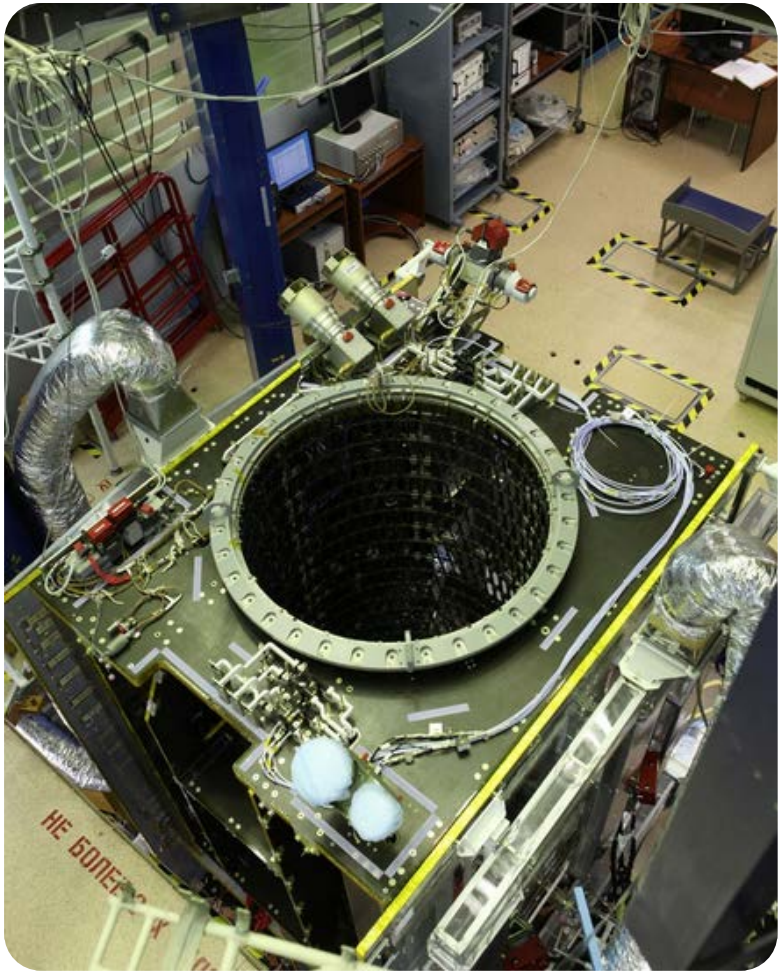
| | EXPRESS-1000K | EXPRESS-1000H | EXPRESS-2000 |
|---|---|---|---|
| **TYPE OF ORBIT** | **GSO** | **GSO** | **GSO** |
| OPERATION LIFETIME(EOL) | 15,25 years | 15,25 years | 15,25 years |
| **PAYLOAD POWER AT EOL** | **3000 W** | **6300 W** | **13000 W** |
| HEAT DISSIPATION | 1800 W | 3500 W | 7500 W |
| **PAYLOAD MASS** | **up to 187 kg** | **up to 660 kg** | **up to 1100 kg** |
| SATELLITE LAUNCH MASS | up to 1400 kg | up to 2100 kg | up to 3250 kg/<br>over 3250 kg |
| LAUNCH CAPABILITIES | DIRECT TO GSO | DIRECT TO GSO<br>/ FULL ELECTRIC GTO TO GSO | DIRECT TO GSO<br>/ FULL ELECTRIC GTO TO GSO |
| **- single launch** | - | - | **PROTON-M** |
| **- group launch** | **PROTON-M** | **PROTON-M** | - |

**All platforms are flight proven**

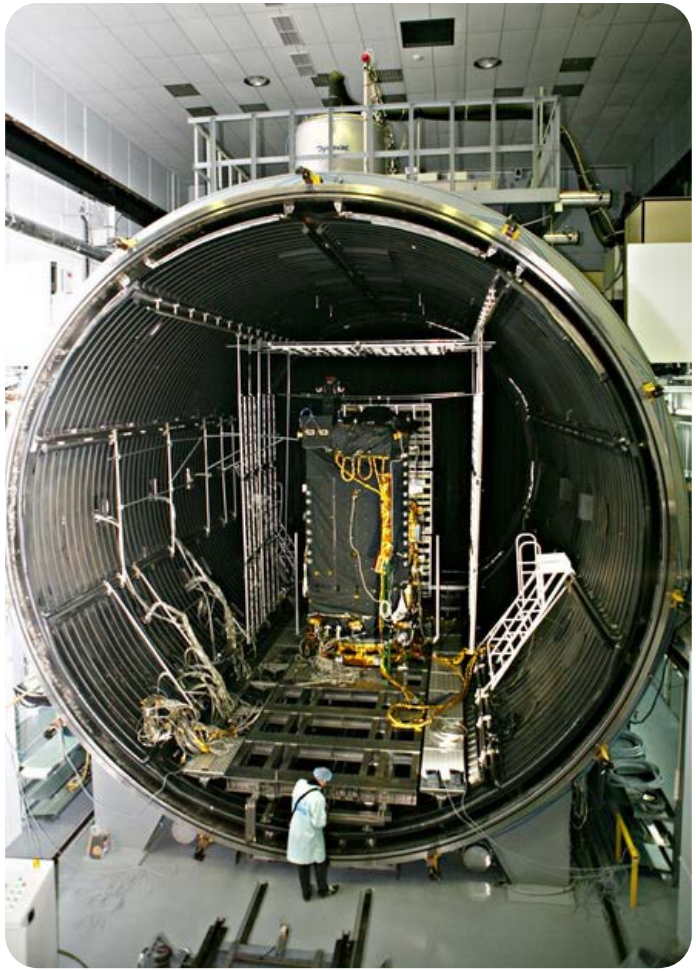
RESHETNEV
COMPANY

# ASSEMBLY, INTEGRATION AND TESTS

# SATELLITE LEVEL TESTS AT ISS-RESHETNEV

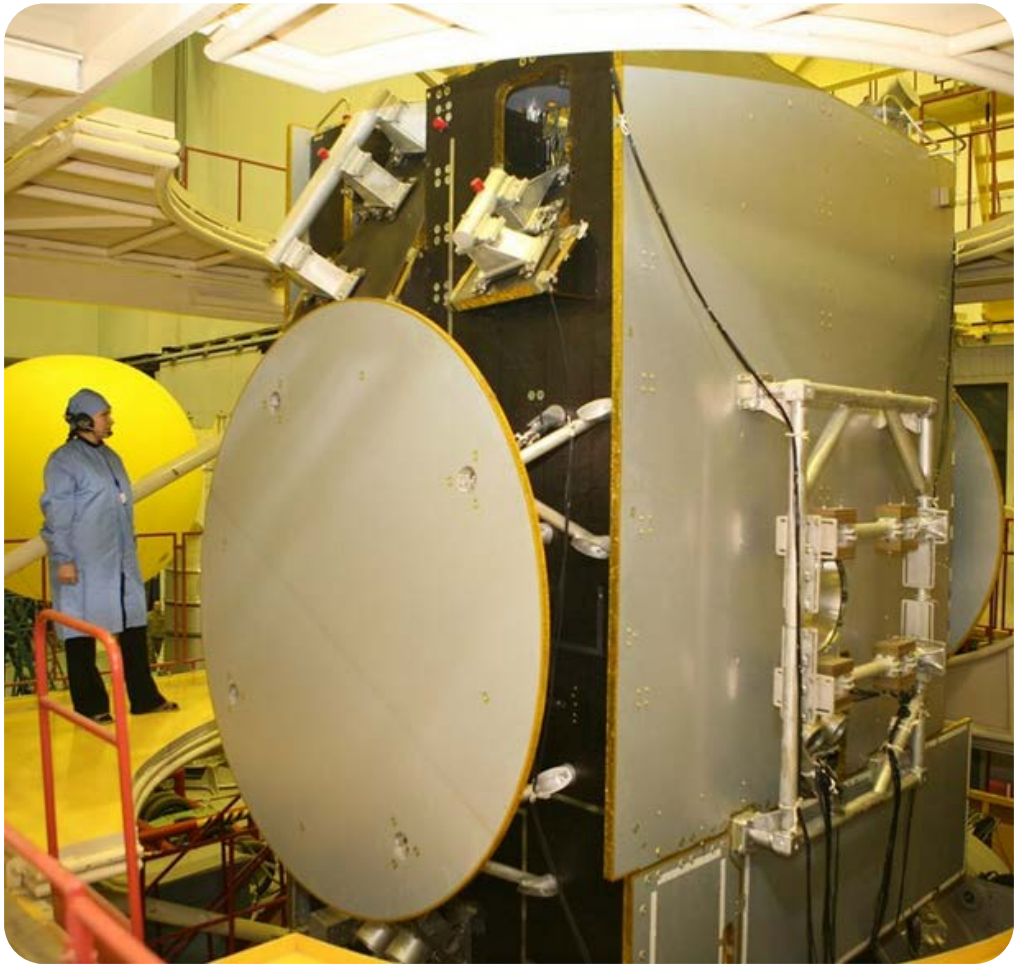


ELECTRICAL TESTS



TVAC TESTS

# SATELLITE LEVEL TESTS AT ISS-RESHETNEV

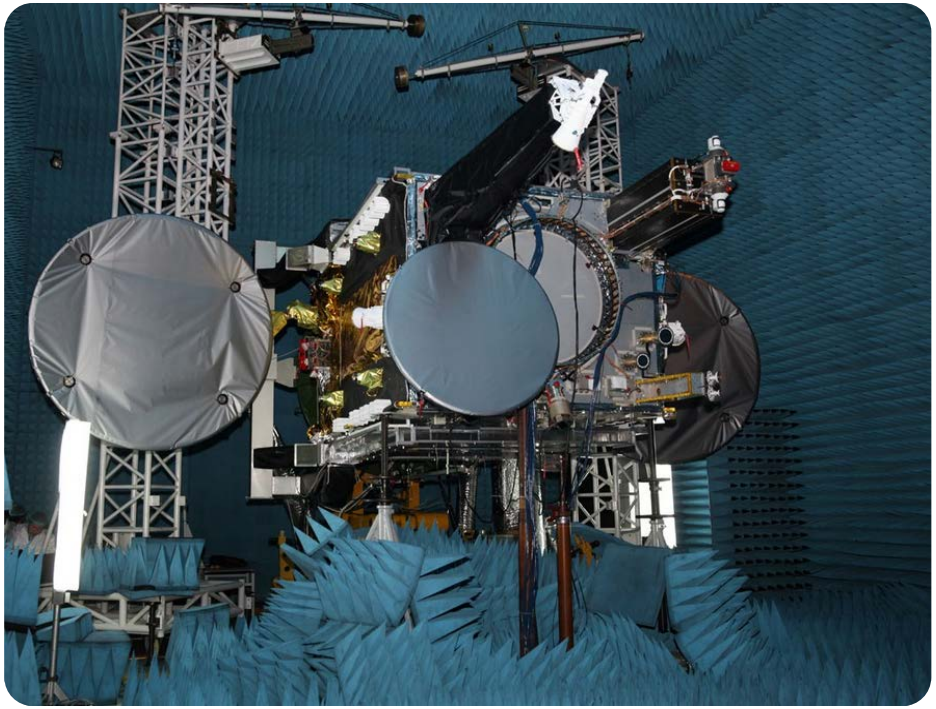


VIBRATION TESTS

ACOUSTIC TESTS

# SATELLITE LEVEL TESTS AT ISS-RESHETNEV

0G SYSTEM FOR SOLAR ARRAYS DEPLOYMENT



TESTING IN ANECHOIC CHAMBER

RESHETNEV
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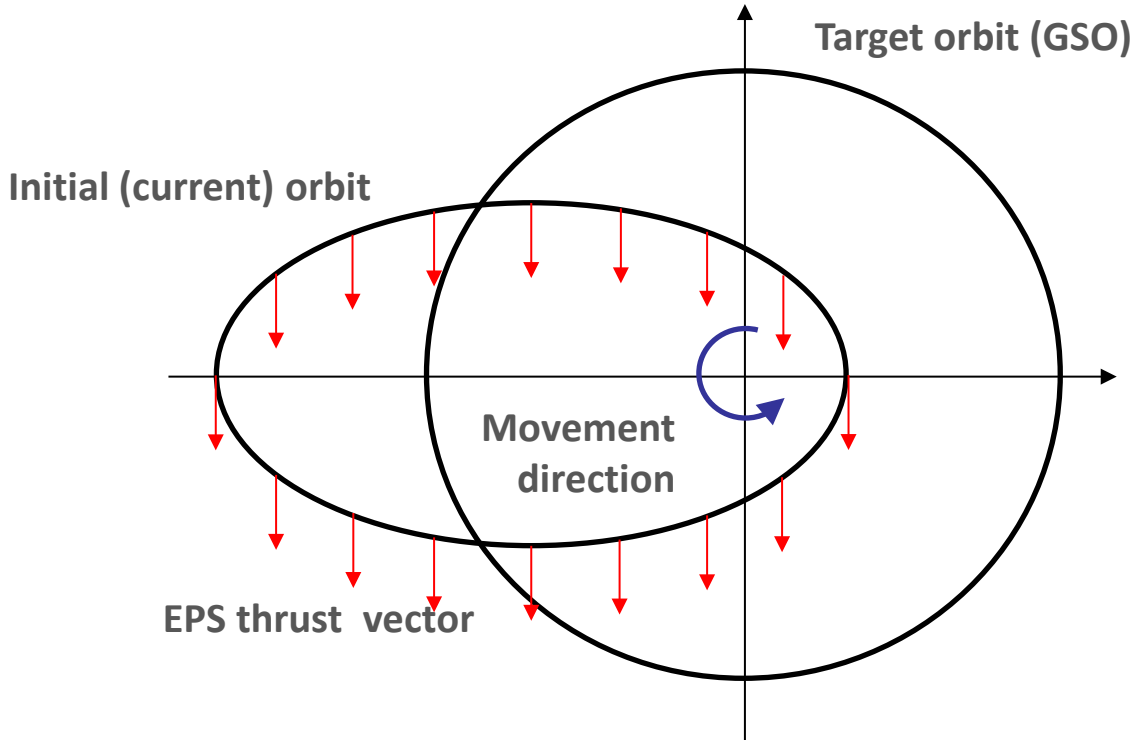
# LAUNCH SERVICES
# and SPACECRAFTS OPERATION

# SINGLE LAUNCH

# GROUP LAUNCH

# FROM GTO TO GSO

**Technology of orbit raising from GTO to GSO using electric thrusters was verified and flight proven (Express-AM5, Express-AM6)**

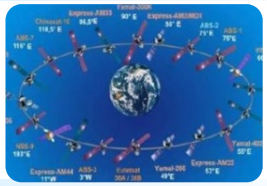


# SUMMARY

# COMPREHENSIVE APPROACH

CREATION OF SATELLITES

SUPPORT IN ORBITAL SLOT COORDINATION



LAUNCH CAMPAIGN

IMPLEMENTATION AND UPGRADE OF GROUND EQUIPMENT

ADDITIONAL SERVICES (SATELLITE OPERATION TRAINING, TECHNOLOGY TRANSFER, SATELLITE OPERATION SUPPORT, PROJECT FINANCING)

# THANK YOU FOR ATTENTION !